THE ASTROPHYSICAL JOURNAL

Supplement Series

Founded in 1895 by George E. Hale and James E. Keeler

ROBERT C. KENNICUTT, JR. Editor-in-Chief

Steward Observatory University of Arizona

JAMES W. LIEBERT Associate Editor-in-Chief Steward Observatory University of Arizona

A. DALGARNO Letters Editor Harvard-Smithsonian Center for Astrophysics

EUGENE H. AVRETT Deputy Letters Editor Harvard-Smithsonian Center for Astrophysics

Scientific Editors

GREGORY D. BOTHUN University of Oregon

GEOFFREY BURBIDGE University of California, San Diego

BERNARD M. HAISCH California Institute for Physics and Astrophysics Palo Alto

ERIC HERBST JOHN P. HUCHRA Ohio State University Harvard-Smithsonian Center for Astrophysics

JOHN T. MARISKA Naval Research Laboratory

FULVIO MELIA University of Arizona STEVEN N. SHORE Indiana University South Bend

EDWARD M. SION Villanova University

CHRISTOPHER SNEDEN University of Texas

F. W. STECKER NASA/Goddard Space Flight Center

JOHN H. THOMAS University of Rochester

ETHAN T. VISHNIAC Johns Hopkins University

STEVEN P. WILLNER Smithsonian Astrophysical Observatory

AAS PUBLICATIONS BOARD

BRUCE G. ELMEGREEN (1999-2002), Chairperson IBM TJ Watson Research Center

SUSAN TEREBEY (1997-2000) Extrasolar Research Corporation

Harvard University

ALYSSA A. GOODMAN (1998-2001) JOEL E. TOHLINE (1999-2001) Louisiana State University

RONALD E. TAAM (1999-2002) Northwestern University

JEAN TURNER (2000-2003) University of California, Los Angeles RAYMOND CARLBERG (2000-2003) University of Toronto

Publication Manager: JULIE STEFFEN

Production Manager: CAROLYN CHMIEL

Chief Manuscript Editor: GERALDINE BRADY

Manuscript Editors: Walter G. Glascoff III, Beth Garrison, Thad A. Doria, Paul Ruich, Sharon Jennings, ELIZABETH HUYCK, ERIC SHUTT, KATHRYN KRAYNIK, ROCHELLE LODDER, RACHEL L. DRZEWICKI,

NORA HOSTETLER, KERRY TUPPER, AND BENJAMIN STONE

Production Staff: CINDY GARRETT, TIMOTHY HARPER, CECILIA HILGEMAN, MIKKI SMITH, LYVETTE MARSH, ASHLEY TOWNE, AND GREG GILLAM Tucson Editorial Office: Janice Sexton, Candace M. Hauser, and Gregory Schwarz

> VOLUME 128 2000 MAY AND JUNE

$\ \, \bigcirc$ 2000 by the american astronomical society. All rights reserved. Published monthly

COMPOSED BY SANTYPE INTERNATIONAL LIMITED, SALISBURY, ENGLAND PRINTED BY THE MACK PRINTING GROUP EASTON, PENNSYLVANIA, U.S.A.

THE ASTROPHYSICAL JOURNAL CONTENTS OF VOLUME 128

2000 MAY, NUMBER 1

REDSHIFT-SPACE DISTORTIONS OF THE POWER SPECTRUM OF COSMOLOGICAL OBJECTS ON A LIGHT CONE: EXPLICIT FORMULATIONS AND THEORETICAL IMPLICATIONS Hiroaki Nishioka & Kazuhiro Yamamoto	Page 1
VLBA OBSERVATIONS OF RADIO REFERENCE FRAME SOURCES. III. ASTROMETRIC SUITABILIOF AN ADDITIONAL 225 SOURCES Alan L. Fey & Patrick Charlot	ITY 17
A NICMOS SURVEY OF EARLY-TYPE GALAXY CENTERS: THE RELATION BETWEEN CORE PROPERTIES, GAS AND DUST CONTENT, AND ENVIRONMENT A. C. Quillen, Gary A. Bower, & M. Stritzinger	85
STRUCTURAL CHARACTERISTICS OF FAINT GALAXIES SERENDIPITOUSLY DISCOVERED WITH THE HUBBLE SPACE TELESCOPE WFPC2 Karen O'Neil, G. D. Bothun, & C. D. Impey	99
RELATIVISTIC THERMAL BREMSSTRAHLUNG GAUNT FACTOR FOR THE INTRACLUSTER PLA ANALYTIC FITTING FORMULAE Naoki Itoh, Tsuyoshi Sakamoto, Shugo Kusano, Satoshi Nozawa, & Yasuharu Kohyama	SMA. II. 125
HUBBLE SPACE TELESCOPE WFPC2 IMAGING OF A SAMPLE OF EARLY-TYPE SEYFERT GALA Pierre Ferruit, Andrew S. Wilson, & John Mulchaey	AXIES 139
A CATALOG OF SOFT X-RAY SHADOWS, AND MORE CONTEMPLATION OF THE ¹ / ₄ keV BACKG S. L. Snowden, M. J. Freyberg, K. D. Kuntz, & W. T. Sanders	GROUND 171
A THREE-POSITION SPECTRAL LINE SURVEY OF SAGITTARIUS B2 BETWEEN 218 AND 263 GH DATA ANALYSIS A. Nummelin, P. Bergman, Å. Hialmarson, P. Friberg, W. M. Irvine, T. J. Millar, M. Ohishi, & S. Saito	z. II. 213
THE SPECTRAL SIGNATURE OF DUST SCATTERING AND POLARIZATION IN THE NEAR-INFR. TO FAR-ULTRAVIOLET. I. OPTICAL DEPTH AND GEOMETRY EFFECTS Victor G. Zubko & Ari Laor	ARED 245
33.8 GHz CCS SURVEY OF MOLECULAR CORES IN DARK CLOUDS Shih-Ping Lai & Richard M. Crutcher	271
THE FORMATION OF STELLAR CLUSTERS: GAUSSIAN CLOUD CONDITIONS. I. Ralf S. Klessen & Andreas Burkert	287
2000 JUNE, NUMBER 2	
HOW EXACTLY DID THE UNIVERSE BECOME NEUTRAL? Sara Seager, Dimitar D. Sasselov, & Douglas Scott	407
A DATABASE OF CEPHEID DISTANCE MODULI AND TIP OF THE RED GIANT BRANCH, GLOB CLUSTER LUMINOSITY FUNCTION, PLANETARY NEBULA LUMINOSITY FUNCTION, AND SUR BRIGHTNESS FLUCTUATION DATA USEFUL FOR DISTANCE DETERMINATIONS Laura Ferrarese, Holland C. Ford, John Huchra, Robert C. Kennicutt, Jr., Jeremy R. Mould, Shoko Sakai, Wendy L. Freedman, Peter B. Stetson, Barry F. Madore, Brad K. Gibson, John A. Graham, Shaun M. Hughes, Garth D. Illingworth, Daniel D. Kelson, Lucas Macri, Kim Sebo, & N. A. Silbermann	
A DATABASE OF TULLY-FISHER CALIBRATOR GALAXIES Lucas M. Macri, John P. Huchra, Shoko Sakai, Jeremy R. Mould, & Shaun M. G. Hughes	461
MICROJANSKY RADIO SOURCES IN DC 0107-46 (ABELL 2877) A. Hopkins, A. Georgakakis, L. Cram, J. Afonso, & B. Mobasher	469
JET DIRECTIONS IN SEYFERT GALAXIES: B AND I IMAGING DATA	479

CONTENTS

	Page
A STUDY OF THE POPULATIONS OF X-RAY SOURCES IN THE SMALL MAGELLANIC CLOUD WITH ASCA Jun Yokogawa, Kensuke Imanishi, Masahiro Tsuiimoto, Mamiko Nishiuchi, Katsuji Koyama, Fumiaki Nagase,	491
& Robin H. D. Corbet	
CALIBRATION OF NEBULAR EMISSION-LIKE DIAGNOSTICS. I. STELLAR EFFECTIVE TEMPERATURES M. S. Oey, M. A. Dopita, J. C. Shields, & R. C. Smith	511
THE ULYSSES SUPPLEMENT TO THE GRANAT/WATCH CATALOG OF COSMIC GAMMA-RAY BURSTS K. Hurley, N. Lund, S. Brandt, C. Barat, T. Cline, R. Sunyaev, O. Terekhov, A. Kuznetsov, S. Sazonov, & A. Castro-Tirado	549
THE TREE PARTICLE-MESH N-BODY GRAVITY SOLVER Paul Bode, Jeremiah P. Ostriker, & Guohong Xu	561
SiO MASER SURVEY OF THE GALACTIC DISK IRAS SOURCES. II. $ l \le 3^\circ$ AND $ b \le 3^\circ$, THE GALACTIC CENTER AREA Shuji Deguchi, Takahiro Fujii, Hideyuki Izumiura, Osamu Kameya, Yoshikazu Nakada, Jun-ichi Nakashima, Takafumi Ootsubo, & Nobuharu Ukita	571
H ₂ O-H ₂ O COLLISION RATE COEFFICIENTS Giovanni Buffa, Ottavio Tarrini, Flavio Scappini, & Cesare Cecchi-Pestellini	597
1–4 MICRON SPECTROPHOTOMETRY OF DUST IN THE TAURUS DARK CLOUD: WATER ICE DISTRIBUTION IN HEILES CLOUD 2 Koji Murakawa, Motohide Tamura, & Tetsuya Nagata	603
TYPE Ia SUPERNOVA EXPLOSIONS IN BINARY SYSTEMS: THE IMPACT ON THE SECONDARY STAR AND ITS CONSEQUENCES E. Marietta, Adam Burrows, & Bruce Fryxell	615
CALIBRATING ARRAY DETECTORS D. J. Fixsen, S. H. Moseley, & R. G. Arendt	651
INDEX	i

